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Effect of Corporate Sustainability on the Productivity of Manufacturing Firms in Nigeria, 2011 - 2020

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ABSTRACT

This study examined the effect of corporate sustainability on the productivity of manufacturing firms in Nigeria covering the period of ten (10) years, 2011 to 2020. The specific objectives of the study were; (i) to evaluate the effect of economic sustainability and to ascertain the effect of environmental sustainability on return on capital employed of manufacturing firms in Nigeria. This study adopted the ex post facto research design as the researcher made use of past data in the form of secondary data to evaluate the effect of corporate sustainability on the productivity of manufacturing firms in Nigeria. Data for the study were generated from the annual financial statements of the selected manufacturing firms. The method of data analysis employed in the study was the panel data regression analysis and the major diagnostic tests were the unit-root test, cointegration test, and normality test. The major findings of the study were that economic sustainability measured with revenue contributed positively but insignificant to the return on capital employed of manufacturing firms in Nigeria (β = 0.112516, p-value = 0.3811 > 0.05) and environmental sustainability measured with employee health and safety costs contributed positively but insignificant to the return on capital employed of manufacturing firms in Nigeria (β = 0.027756, p-value = 0.6671 > 0.05). The implications of these findings were that corporate sustainability contributed positively to the productivity of the selected manufacturing firms but the contribution is not consistent and significant. The study, therefore, concluded that the companies have the prospects and potentials to achieve significant positive contributions in the long run. The study, therefore, recommended that the management of these firms should be more strategic by engaging in sustainability practices since the sustainability parameters were seen to have a positive but non-significant effect on the productivity of manufacturing firms on average.

Keywords: *Corporate Sustainability, Productivity, Manufacturing Firms*

1. Introduction

Naturally, creation was made good and beautiful, things created were made to continue in perpetuity, that is, every living thing brings its kind and has dominion so that posterity would remain. Sustainability is important to every living thing on this planet, family and business in particular. Sustainability is meeting the needs of the present generation without compromising the ability of future generations to meet their own needs, it is the utilization of resources to meet the economic, social, and environmental needs of humans such that the interest of present and future generations are preserved, (Brundtland, 2015).

Corporate sustainability has assumed great importance in the management of an organization. It means, creating long-term shareholders' value by embracing opportunities and managing risks arising from social, environmental, and economic factors, (Mays, 2013). The overall objective of any organization is to consistently grow and survive on a long-term basis. Most managers are aware that their organizations are part of a large system that has profound positive and negative influences on their operations. This implies that if these organizations must effectively and efficiently meet their objectives, they should properly adapt themselves to their environments.

There is an increasing awareness that companies are made responsible for consequential environmental and social effects of their activities to the host communities and other stakeholders.

Ekwueme (2017) asserts that the big corporations once looked upon as the exclusive concern of its owners is now viewed as being responsible to the society also. This implies that companies, not only pay attention to the maximization of profit and shareholder's wealth alone but are embracing activities that tend to maximize the benefits accruable to all the stakeholders. This, to a large extent, means that companies are responding positively towards issues of sustainability. White (2009) maintains that the pressure for corporations to reassure the public of their good behavior has increased. He further emphasized that organizations are paying attention to their stockholders as well as their stakeholders. Business managers are beginning to see that this approach to conducting business has to become a part of the strategy for their companies to prosper in the future and have a good reputation. Also, firms should be held accountable for various beneficial and harmful impacts of their activities on the overall society and environment in which they exist and they should make proper disclosure of these effects in an appropriate sustainability report, which provides a detailed description of their governance structure, stakeholder engagement approach, and triple bottom line performance.

Statement of the Problem

A sustainable economy is not only that which is profitable at a given point in time but also an economy that can sustain its goods from one generation to another. The problem of this study lies in societal needs and environmental issues. The interferences of human-related activities as a result of industrialization and population explosion have caused a severe and negative effect on the environment and have become a global concern. Many of the challenges facing mankind, such as climate change, water pollution as a result of the disposal of waste products, depletion of natural resources as a result of usage of land for economic growth, poor air quality as a result of emission of fossil gases, inequality, and hunger, can only be resolved by promoting sustainable development, a commitment to social progress, environmental balance and economic growth. The need for action to protect present and future generations and guarantee the well-being of the people require the active involvement of corporate firms.

Objective of the Study

The main objective of this study was to examine the effect of corporate sustainability on the productivity of manufacturing firms in Nigeria. The specific objectives were to:

1. Evaluate the effect of economic sustainability on return on capital employed of manufacturing firms in Nigeria.
2. Ascertain the effect of environmental sustainability on return on capital employed of manufacturing firms in Nigeria.

Statement of Research Hypotheses
The following null hypotheses were tested in the course of the study:

1. Economic sustainability has no significant effect on the return on capital employed of manufacturing firms in Nigeria.
2. Environmental sustainability has no significant effect on the return on capital employed of manufacturing firms in Nigeria.

2. Review of Related Literature

2.1 Conceptual Review

Corporate Sustainability
Corporate sustainability evolved as a derivation of the concept of sustainable development, which was first introduced by the United Nations' World Commission on Environment and Development (WCED) in 1987. Sustainable development got a global spread in 1987, "our common future" published by the world commission for environment and development, which described sustainable development as a development that meets the needs of present generations without compromising the ability of future generations to meet their needs or, as described in the book, as a process of change in which the exploitation of resources, the direction of investments, the orientation of technological development and institutional change are all in harmony and enhance both current and future potential to meet human needs and aspirations. (Brundtland, 2015).

The commission emphasized that the achievement of sustainable development could not be left to government regulators and policymakers. It agrees that industry has a significant role to play and argued that corporations, as engines for economic growth needed to be more proactive in balancing this drive with social equity and environmental protection because they have partly been the cause of some unstainable conditions, harmful activities such as emission of fossil gases and deforestation, among others, putting the future in danger. Therefore, the need to balance economic growth with environmental protection and social equity because they have access to the resources necessary to address the problems.

Economic Sustainability
The economy is about conserving resources and the concept is used to define and explain the value resources have today and their possible value in the future. Economic sustainability is an integrated part of sustainability and means that you must use, safeguard and sustain resources (human and material) to create long-term sustainable values by optimal use, recovery, and recycling. In other words, we must conserve finite natural resources today so that future generations too can cater to their needs. (University of Gavle Publication, 2018)

Environmental Sustainability
Environmental sustainability can be defined as how well we preserve the sanctity of our environment. This could mean developing more sustainable methods of procuring and using tangible natural resources like wood, metal, or water as well as more ephemeral resources like electricity. This factor is all about moderation as species we need to curb our unchecked consumption of natural resources in order to be more sustainable.

2.2 Theoretical Framework

The theories considered relevant and reviewed in this study are legitimacy and stakeholder theory.

Legitimacy Theory
Legitimacy theory was developed by John Dowling and Jeffrey Pfeffer in 1975 (Guthrie and Ward, 2006) in (Olateju, Olateju, Adeoye, Ilyas, 2021). The theory exists in conformity with the value system of a larger social system of which the establishment is a part. It is based on the idea that a social contract exists between business and society.

Stakeholder Theory
Edward Freedman propounded the Stakeholder Theory in 1984 and stated that shareholders are merely one of many stakeholders in a company. The traditional definition of a stakeholder is 'any group or individual who can affect or is affected by the achievement of the organizations' objectives. Freeman, (1984) in Fontaine, Harman, and Schmid, (2006) related to the overarching objective of maximizing stakeholder value. Consideration of stakeholder

interests in managerial decision-making is described by Freeman to enable better consequences for all stakeholders because it recognizes that stakeholder interests are joint.

2.3 Empirical Review

Ameer and Othman (2011) examined Sustainability Practices and Corporate Financial Performance: A study based on the top global corporations. The target population of this study consisted of 100 sustainable global companies in 2008 which were selected from a universe of 3,000 firms from developed countries and emerging markets. The result revealed a significant higher mean sales growth, return on assets, profit before taxation, and cash flows from operations in some activity sectors of the sample companies compared to the control companies throughout 2006–2010. Also, the findings showed that the higher financial performance of sustainable companies increased and was sustained over the sample.

Kwaghfan (2015) ascertained the impact of sustainability reporting on the corporate performance of selected quoted companies in Nigeria. The research employed an ex-post facto design. The sample for the study was made up of 64 companies selected from 76 non-financial companies quoted on the Nigerian stock exchange. The research utilized secondary data. A model specification based on a regression model was used. The statistical technique employed in testing the hypotheses was the student t-test statistic. Findings from this study showed that Sustainability Reporting impacted positively on the financial performance of companies investigated. Companies are therefore encouraged to adopt this reporting system.

Hussain (2015) examined the impact of sustainability performance on the financial performance of Global Fortune firms and find that economic sustainability has no significant relationship with both market performance and accounting performance of reporting firms. Environmental sustainability and social sustainability performance measures have a significant and positive relationship with both market performance and accounting performance of reporting firms. There is no relation between all the sustainability disclosures and changes in capital structure.

Gilbert (2018) determined the effect of corporate sustainability on the profitability of listed pharmaceutical firms in Nigeria. An *ex-post facto* research design approach was adopted for the study. The population of this study comprises all pharmaceutical firms listed on the floor of the Nigeria Stock exchange. Secondary data were obtained from the annual report of the companies of seven (7) sampled firms which covered from the 2012 to 2017 financial year. Data were analyzed using ordinary linear regression. The results showed that there is a negative and insignificant relationship between the economic disclosure index and Return on Assets whereas both Environmental and Social disclosure indexes have a statistically positive but insignificant relationship with the Return on assets of pharmaceutical firms in Nigeria. The findings further revealed that the Environmental disclosure index has a statistically negative and insignificant relationship to Return on equity whereas there is a positive but insignificant relationship to both economic and Social disclosure indexes and Return on equity of pharmaceutical firms in Nigeria. Finally, the result established also that economic and Social disclosure indexes have a statistically positive but insignificant relationship with net profit margin whereas there is a negative and insignificant relationship between the Environmental disclosure index and net profit margin of pharmaceutical firms in Nigeria.

Muhammad (2014) examined the voluntary sustainability reporting among the Nigerian food and beverages firms and its impact on the firm's profitability and size, using a secondary source of data. Content analysis was used to measure sustainability reporting of the firms while regression analysis was used to determine the predictors of the disclosures. the findings show that firms disclosed more of their environmental activities than other aspects of sustainability reporting. Again, there is a significant positive relationship between the size of the company and the extent of sustainability disclosure.

Gabriel (2015) with the application of the Ordinary Least Squares (OLS) technique analyzed large Indian companies with five-year data to test the impact of corporate sustainability on firm performance. The study document that corporate sustainability practices of a company impact its performance both Return on Asset (ROA) and Tobin's Q negatively in the short-run but insignificant impact on both measures in the long run.

Chen, (2015) examined sustainability and company performance: Evidence from the manufacturing industry. The study investigated the current situation regarding manufacturers' sustainable initiatives and explored the relationship between these sustainable practices and companies' performance, including financial performance, operational performance, innovation performance, environmental performance, and social performance. Cluster analysis, non-parametrical Kruskal–Wallis one-way ANOVA test, and Spearman's rho test for correlation were

applied to the non-parametric data, whereas cluster analysis, factor analysis, t-test, and Pearson test for correlation were used with continuous data. The findings showed that many environmental management practices had a strong positive impact on innovation performance; also, several social sustainability indicators, such as product responsibility, human rights, and society, displayed a significant and positive correlation with return on equity in the sample companies.

3. Methodology

This study adopted the *Ex post facto* research design as the researcher made use of past data in the form of secondary data to evaluate the effect of corporate sustainability on the profitability of manufacturing firms in Nigeria. *Ex post facto* was chosen as a suitable research design for this work because the dataset obtained for analysis was wholly secondary data, which would not be manipulated. The study area for this research is Nigeria with a particular focus on six manufacturing companies in Nigeria, namely: Dangote Sugar Plc., Nigeria Breweries Plc., Flour Mills of Nigeria Plc., Unilever Nigeria Plc., Northern Nigeria Flour Mills Plc. and Nestle Food Nigeria Plc. The population of this study comprised of twenty-eight (28) Consumer goods manufacturing firms listed on the Nigeria stock exchange.

The sample size of this study was six (6) consumer goods that have sustainability disclosures. Four firms that were included in this study- Cadbury Nigeria Plc., 7Up Nigeria Plc., PZ Cussons Nigeria Plc. and Honey Well Flour Mills Nigeria Plc. were dropped because they do not have up-to-date variables needed for this study. A judgmental sampling technique was used in arriving at the sample size of the study. Judgmental sampling involves the choice of subjects that are most advantageously placed or in the best position to provide the information required.

The data used for this research were extracted from the annual reports of the selected manufacturing firms. The data were for the period of ten years ranging from 2011-2020. Secondary data were considered appropriate given the fact that the study was correlational in nature and basically attempted to establish an effect or lack of it under the study variables.

According to Koutsoyiannis (2003), a model specification is a mathematical expression that involves the determination of the dependent and independent variables. The general objective is specified thus:

$$LOGROCE_{it} = \beta_{0it} + \beta_{1it} LOG\ Re\ v + \beta_{2it} LOGEHSC + \mu \quad (3.1)$$

For the specific objectives, the model becomes thus:

For Objective One
To determine the effect of economic sustainability on return on capital employed of selected manufacturing firms in Nigeria.

$$LOGROCE_{it} = \beta_{0it} + \beta_{1it} LOG\,\mathrm{Re}v + \mu \quad \text{..... (3.2)}$$

For Objective Two
To ascertain the effect of environmental sustainability on return on capital employed of selected manufacturing firms in Nigeria.

$$LOGROCE_{it} = \beta_{0it} + \beta_{1it} LOGEHSC + \quad \text{..... (3.3)}$$

ROCE = Return on capital employed

REV. = Revenue

EHSC = Employee Health and Safety Costs

CSR = Corporate Social Responsibility

SAL/WAG = salaries and wages

i = Individual Firm

t = Time Series; μ = Stochastic Error Term

β's = structural Parameters to be estimated

4. Data Presentation and Analysis of Results

Data Presentation

Table 4.1 Extracts from Annual Reports and Accounts of Selected Firms

Firms	Title	ROCE	Log(rev)	Log(ehsc)	Log(salwag)	Log(csr)
Nigerian Breweries PLC.	1	0.439200	26.05598	19.84138	23.21647	17.51434
	2	0.383300	26.25666	20.26598	23.56818	18.21825
	3	0.453700	26.31798	20.28631	23.67818	19.14823
	4	0.284400	26.30676	20.30623	23.75340	18.75715
	5	0.288300	26.40685	20.55957	24.03745	18.69071
	6	0.238000	26.47266	20.41402	24.08711	18.98599
	7	0.252800	26.56681	20.61233	24.12779	18.15783
	8	0.154400	26.50401	20.59884	24.17325	17.87078
	9	0.145100	26.50092	20.55248	24.12112	18.36694
	10	0.126700	26.54335	20.70714	24.12112	20.26914
Nestle Food Nig. PLC	1	0.297400	23.00565	16.28378	22.81389	16.36511
	2	0.407500	25.48544	19.44313	22.68054	17.42691
	3	0.371300	25.61361	19.51260	22.80271	17.39418
	4	0.475400	25.68611	19.55851	22.94247	17.63426
	5	0.567400	25.74055	19.75568	22.99126	17.66972
	6	0.367200	25.92727	20.26440	23.12116	15.98776
	7	0.829800	26.22043	20.02209	23.14807	14.55172
	8	0.863700	26.30676	20.16465	23.23287	17.34084
	9	1.146800	26.37224	20.24200	23.24899	17.57451
	10	0.803700	26.38275	20.59316	23.26487	20.49762
Unilever Nig. PLC	1	0.613700	24.72513	20.32279	21.72757	18.45024
	2	0.627900	24.73965	20.74307	21.84820	17.82919
	3	0.505300	24.81761	20.84548	21.97888	17.54812
	4	0.321300	24.74504	21.18069	22.19574	17.30792
	5	0.299800	24.80419	21.07392	22.29811	19.17210
	6	0.305900	24.96890	18.69071	22.26442	19.05195
	7	0.153500	25.23193	18.79912	22.32265	16.74275
	8	0.103700	25.25479	14.88353	22.52332	17.58726
	9	0.330500	24.82591	15.14275	22.51336	17.92368
	10	0.095300	24.85040	22.19803	22.34265	19.30857
Dangote Sugar Refinery PLC	1	0.244800	25.39609	16.12199	21.31105	14.89170
	2	0.323200	25.39609	16.18342	21.31105	15.14523
	3	0.313400	25.34824	14.16123	21.61116	19.45387
	4	0.274600	25.26762	16.77996	21.39621	16.59371
	5	0.264000	25.32844	16.66222	21.12204	15.53683
	6	0.252700	23.53867	16.52089	21.47468	17.69584
	7	0.361600	26.01153	17.56127	20.99329	19.75831
	8	0.414200	25.71370	15.95133	21.19950	19.52594

	9	0.275500	25.78586	18.21227	21.11531	17.03287
	10	0.139200	26.05114	15.01125	21.74572	20.55603
Northern Nig. Flour Mills PLC	1	0.393800	23.15688	15.73947	19.62365	16.76938
	2	0.162300	23.26487	14.28426	19.68763	16.53483
	3	0.491400	23.18285	15.64344	19.55530	16.41375
	4	0.160700	23.32596	15.60527	19.49226	14.84191
	5	0.153500	23.07464	15.64617	19.52924	16.43488
	6	0.020600	20.70204	13.67969	18.90926	14.83868
	7	0.006200	20.66245	16.23454	18.20424	14.33132
	8	0.137000	21.77409	15.34764	18.50686	11.15625
	9	0.250500	22.14637	15.46897	22.57800	12.62807
	10	0.151600	22.90255	15.99954	22.88889	11.15625
Flour Mills Nig. PLC	1	0.142200	25.81086	18.80594	21.88642	16.76938
	2	0.181700	25.93275	19.08337	22.16547	16.53483
	3	0.117700	26.14380	19.77135	22.85150	17.22335
	4	0.134700	26.22860	19.97672	23.03580	17.54120
	5	0.059000	26.16135	19.78932	22.89574	17.13785
	6	0.036200	26.23669	19.31268	22.27083	16.68455
	7	0.236800	26.65019	20.22239	22.30018	16.58810
	8	0.160500	26.68685	12.88244	22.01250	16.84564
	9	0.092300	26.63677	18.36799	22.57800	16.19968
	10	0.070600	26.70215	18.72079	22.88889	20.90559

Source: ***Annual Financial Statements of Selected Firms***

Data Analysis

Table 4.2 Panel Descriptive Analysis

	ROCE	REV	EHSC
Mean	0.304592	25.18094	18.29354
Median	0.269300	25.69991	19.19803
Maximum	1.146800	26.70215	22.19803
Minimum	0.006200	20.66245	12.88244
Std. Dev.	0.221423	1.498110	2.366158
Skewness	1.525154	-1.375306	-0.494051
Kurtosis	5.809497	4.208311	1.922367
Jarque-Bera	42.99413	22.56470	5.344092
Probability	0.000000	0.000013	0.069111
Sum	18.27550	1510.856	1097.612
Sum Sq. Dev.	2.892668	132.4156	330.3234
Observations	60	60	60

Source: ***Researcher's Computation Using E-Views 10.***

Regression and descriptive analysis of the data set were used to show and communicate the various statistical properties and the behaviour of the variables under analysis. The mean simply tells us the average value for each of the variables. For ROCE, the mean is 0.304592%, REV is 25.18094 and EHSC is 18.29354. The median measures the middle values for each of these four variables. For ROCE, the median is 0.269300, REV is 25.69991 and EHSC is 19.19803. The standard deviation tells us the deviation from the sample mean with respect to each of the variables. It clearly showed that ROCE deviated from the sample mean by 0.221423, REV deviated by 1.498100 which is clearly higher than the deviation of ROCE. EHSC deviated by 2.366158. For normal skewness, the value is zero, and the

kurtosis measures the flatness and sharpness of the variables. The Jarque-Berra measures the difference of the skewness and kurtosis of the series with those from the normal distribution. However, our interest is in the probability values of the Jarque-Berra statistic. It shows that the Jarque-Berra yielded 0.000000 < 0.05, 0.000013 < 0.05, 0.069111 > 0.05, for ROCE, REV and EHSC, respectively.

Results of Panel Data Regression Analysis

To avoid spurious regression estimates, a panel data regression analysis was examined for stationarity to determine the order of integration. Panel data regression analysis is accepted to be stationary if it exhibits mean reversion in that it fluctuates around a constant long-run mean, has a finite variance that is time-invariant and has a theoretical correlogram that diminishes as the lag length increases. The raw data is reported in appendix II

Table 4.3 Unit-Root Test Results

Variables	ADF-Fisher Statistic	Critical Val.	Order of Integration
ROCE	22.8066	-1.84827	I(0)
REV	4.80319	1.91639	I(0)
EHSC	4.04728	2.55340	I(0)

Source: ***Researcher's Computation Using E-views 9.***

It can be seen from Table 4.3 that the panel variables are stationary at level form. This is justified on the statistical output in table 4.2 where the ADF-Fisher statistic is absolutely greater than the critical value at 5% level of significance. This prompts the need to subject them to test of co-integration.

Table 4.4 Panel Cointegration Test

Pedroni Residual Cointegration Test			
Series: ROCE REV EHSC			
Date: 09/20/21 Time: 14:22			
Sample: 2011 2020			
Included observations: 60			
Cross-sections included: 6			
Null Hypothesis: No cointegration			
Trend assumption: No deterministic trend			
User-specified lag length: 1			
Newey-West automatic bandwidth selection and Bartlett kernel			
Alternative hypothesis: common AR coefs. (within-dimension)			
			Weighted
	Statistic	**Prob.**	**Statistic**	**Prob.**
Panel v-Statistic	5.914595	0.0198	-1.335873	0.9092
Panel rho-Statistic	7.381696	0.0014	2.429317	0.9924
Panel PP-Statistic	5.171212	0.0008	-0.500651	0.3083
Panel ADF-Statistic	8.966149	0.0030	-0.325656	0.3723
Alternative Hypothesis: Individual AR coefs. (between-dimension)				
	Statistic	**Prob.**		
Group rho-Statistic	7.558604	0.0098		
Group PP-Statistic	9.915036	0.0001		
Group ADF-Statistic	6.211413	0.0037		

Source: ***Researcher's Computation Using E-views 9***

The long-run equilibrium test was carried out on the variables under investigation as displayed in table 4.3. It can be clearly seen from the outcome statistics of Panel v, Panel rho, Panel PP, Panel ADF, Group rho, Group PP, and Group ADF all yielded probability values less than 0.05 (5%) and statistics greater than absolute two. This entails that the variables have a long-run relationship. Hence; ROCE, REV, and EHSC are all cointegrated.

Table 4.5 Panel Regression Analysis

Dependent Variable: LOG(ROCE)		
Method: Panel Least Squares		

Date: 09/20/21 Time: 14:39				
Sample: 2011 2020				
Periods included: 10				
Cross-sections included: 6				
Total panel (balanced) observations: 60				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C	6.895218	1.989885	3.465134	0.0010
LOG(REV)	0.112516	0.127421	0.883028	0.3811
LOG(EHSC)	0.027756	0.064183	0.432450	0.6671
R-squared	0.339970	Mean dependent var		-1.480525
Adjusted R-squared	0.277422	S.D. dependent var		0.888945
S.E. of regression	0.853840	Akaike info criterion		2.601510
Sum squared resid	40.09737	Schwarz criterion		2.776039
Log-likelihood	-73.04530	Hannan-Quinn criteria.		2.669778
F-statistic	2.237811	Durbin-Watson stat		1.783181
Prob(F-statistic)	0.076700			

Source: ***Researcher's Computation Using E-views 9***

Interpretation of the Numerical Coefficients

It can be seen from Table 4.5 that the coefficient of revenue (REV) which is a proxy for economic sustainability yielded a positive numerical coefficient at the magnitude of 0.112516. This entails that economic sustainability contributes positively to manufacturing sector productivity.

The panel data regression analysis in table 4.4 shows that the numerical coefficient of employee health and safety costs (EHSC) which is a proxy for environmental sustainability costs yielded a positive numerical coefficient at the magnitude of 0.027756. This entails that there exists a positive relationship between environmental sustainability costs and the productivity of manufacturing firms in Nigeria for the period under analysis. This outcome conforms to economic a priori expectation because environmental sustainability is expected to improve the productivity of a firm by ensuring environmental friendliness and viability.

Coefficient of Determination (R-Squared)

The result in Table 4.5 shows that the R-squared value is 0.339970, which implies that approximately 33% of the variation in EHSC is explained in the model by the changes in the sustainability variables; leaving approximately 67% to the error term. This also means that the line of best fit was not highly fitted.

F-Statistics

The F-statistics is used to test the statistical significance of the entire regression plane. The result of the F-statistic is 2.237811 with a corresponding probability of 0.076700 which implies that the overall regression is not statistically significant. This also means that all the independent variables taken together do not impact significantly the productivity of the manufacturing firms.

Test of Autocorrelation (Durbin-Watson)

The value of the Durbin-Watson from table 4.4 yielded 1.783181. This implies that there is no presence of an autocorrelation problem in the model. It further implies that the error terms are not serially correlated and hence the regression coefficients are reliable for policy analysis and forecasts.

Summary of Findings

1. Economic sustainability measured with revenue contributed positively but non-significant to the return on capital employed of manufacturing firms in Nigeria.
2. Environmental sustainability measured with employee health and safety costs contributed positively but non-significant to the return on capital employed of manufacturing firms in Nigeria.

5. Conclusion

This study has been able to carry out an empirical analysis of the effect of corporate sustainability on the productivity of manufacturing firms in Nigeria covering a period of ten (10) years, 2011-2020. The major findings of the study revealed that the two of the sustainability variables contributed positively but non-significant to the return on capital employed of manufacturing firms in Nigeria for the period under analysis. The justification or explanation behind these findings was that majority of the sustainability variables were expenditures (costs) aside from revenue (economic sustainability). Based on this, the effect of expenditures on productivity is achieved in the long run. The numerical coefficient revealed a short-run coefficient and the positive but non-significant numerical coefficient entailed that the company has the prospects and potentials to achieve significant positive contribution in the long run.

6. Recommendations

Based on the major findings of the study, the following recommendations were made:

1. Firms are advised to strategize by assessing their businesses, analyzing the scenario of their businesses, the condition of the market, new advertisement strategies, and the situation of their competitors is also, very crucial in order to boost their sales and increase revenue.
2. Manufacturing firms in Nigeria should, as a matter of necessity and urgency, embed sustainable development practices into their corporate strategy by adopting environmentally efficient technologies and corporate practices with a less negative impact on society and the environment to foster a trans-generational development for which posterity would lay no blame on the present generation.

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